Technique Improves Manufacturing Processes at Small Industrial Plants

Payoff

The Manufacturing Improvement Process (MIP) uses a common sense approach to enhance production and reduce waste while enabling small manufacturers to respond quickly in the event of a national emergency. The new technique has been successfully implemented at several industrial plants located in central Minnesota that help support the nation's defense needs. As a result of MIP, each of these plants is more productive and better equipped to support the nation should a critical-need arise.

Accomplishment

Researchers from the Higher Education Manufacturing Process Applications Consortium (HEMPAC), in cooperation with the Air Force Research Laboratory (AFRL) Materials and Manufacturing Directorate (ML), developed a technique for improving productivity and waste reduction at industrial plants. The technique, called MIP, integrates a common sense approach to enhance production quality, while ensuring small manufacturers can respond quickly in the event of a national emergency. To date, 36 companies in Minnesota, including several that help support the nation's defense needs, have implemented this technique.

Background

Reductions in national defense expenditures in recent years have seriously impacted the industrial workforce. Such is the case in Minnesota, where about 1,200 of the state's 8,700 manufacturing firms are either prime or sub-contractors for the Department of Defense (DoD). The Minnesota Department of Trade and Economic Development estimate approximately 45,000 defense-related positions in Minnesota were lost between 1987 and 1995. These job losses were primarily in machinery and computer equipment manufacturing. During one three-year period, 1989 to 1991, employment declined 10 percent. Manufacturers with less than 1,000 employees were hardest hit because larger companies, in general, have the resources required to deal with cutbacks, whereas smaller companies tend to be more reliant on a fewer number of key contracts. Despite defense industrial base draw downs, it is still vital for U.S. national security that small manufacturers remain capable of responding quickly to national emergencies. One of the best ways of accomplishing this is through continual improvements in manufacturing processes. Researchers at HEMPAC, working with ML, developed a new productivity improvement waste reduction technique called MIP to strengthen Minnesota's defense-related industrial base. MIP is based on a concept referred to as "Optimized Operations" developed by the 3M Company and successfully implemented to support more than 200 projects at its own plants. MIP offers a model for problem solving that is applicable in a wide range of manufacturing situations, routinely identifies potential problems and avoids them before they arise. MIP also demonstrates long-term, ongoing benefits, as well as, short-term gains and integrates a common sense approach using a number of principles such as "Just-in-Time" and "Total Quality Management," proven highly effective in improving both productivity and quality.